

Balfour's researches, it would naturally be supplied by branches from most of the spinal nerves belonging to those segments; and, as the base of connection of the fin with the body became narrowed, these nerves would be brought into closer connection with one another, and would assume the appearance of converging towards the axil of the limb. The fact that the nerves which go to supply the limbs originate from a number of spinal nerves would thus seem to afford an additional argument in favour of this view of the origin of limbs, and against the theory put forward by Gegenbaur that the limbs are modified branchial arches.

EXPLANATION OF PLATE I.

- Fig. 1.—Left pectoral fin of specimen 1.
,, 2.—Pectoral fin of *Ceratodus*, after Huxley.
,, 3.—Pelvic fin, after Günther.
,, 4.—Right pelvic fin of specimen 1.
,, 5.—Left pelvic fin of specimen 1.
,, 6.—Left pelvic fin of specimen 2.
,, 7.—Right pelvic fin of specimen 2.
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NOTES ON THE PLEURONECTIDÆ OF PORT JACKSON, WITH DESCRIPTIONS OF TWO HITHERTO UNOBSERVED SPECIES.

BY WILLIAM MACLEAY, F.L.S., &c.

Fishes of this family are rarely seen in the Sydney Market, and the species most frequently seen and generally known as the "Flounder," cannot, in point of quality as food, be compared with the Turbot, Sole, or other *Pleuronectidæ* of cooler seas. But it by no means follows that, because our fishermen do not catch them, they are really rare or of a quality inferior to the Flat Fish of other parts of the world, indeed I believe that in this Paper I shall be enabled to prove the contrary.

The *Pleuronectidæ* are all ground Fishes, and except in the spawning season, keep in deep water, they moreover seldom, except in the case of one species, ("The Flounder") take a bait, and the only way therefore that they can be captured in their deep haunts, is by the use of the Trawl Net.

Nets of this kind may be said to have been hitherto untried in these waters, for though one or two efforts in the way of experiment in this mode of fishing were made some years ago, they were far from successful, chiefly I believe from the imperfect description of net used.

Opportunities, I am glad to say, will now soon be given, of fairly testing the productiveness of our deep waters, and the suitability of our coast for the use of the Trawl. The Government, acting upon the recommendation of the Commissioners of Fisheries for New South Wales, have lately imported a variety of Nets, Lines, and other implements of fishing of the latest and most improved kinds from England, Norway, and America. Among these are two descriptions of Trawl Nets—a large Grimby Beam Trawl, and an Otter Trawl of 42 feet width of net.

I was present at a trial of the last named net about a fortnight ago, and it is on the results of that trial, that my present paper is founded. The net was first put overboard off Middle Head, and was raised in North Harbour near Manly Beach, it was again lowered at the mouth of Middle Harbour, and raised opposite Clontarf. On both occasions the net was quite full when raised of a very miscellaneous mass of Ascidians, Sponges, Algæ, Crabs, Cephalopods and other Mollusks.

The Fishes consisted of Rays—*Urolophus testaceus*, in great number, *Rhinobatus tuberculatus* or Angel Ray, and *Hypnos subnigrum* or Numb Fish. Of Sharks there were a few young specimens of *Heterodontus Phillipii*, Bl., and *Rhina squatina* or Angel Shark. There were also specimens of *Callionymus*

calcaratus mihi, and *Trigla Kumu*, and *polyommata*. Of *Pleuronectidæ* there were seven species taken :

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| 1. <i>Pseudorhombus Russellii</i> . | 5. <i>Synaptura nigra</i> , mihi. |
| 2. „ <i>multiradiatus</i> . | 6. „ <i>fasciata</i> , n. sp. |
| 3. <i>Pardachirus pavoninus</i> . | 7. <i>Lophorhombus cristatus</i> , n. g. |
| 4. <i>Plagusia unicolor</i> , mihi. | and sp. |

The first of these—*Pseudorhombus Russellii* was got in considerable number. It is the best known of our Flat Fish, taking the hook sometimes readily, and occasionally being captured in the ordinary Seine Net. It is a good fish for the table, though very inferior to the Sole. It is found in all seas from India to Port Jackson, and is generally called “The Flounder” by the Fishermen, and not unfrequently “The Sole” by the Fishmonger, who thereby effects a ready sale. In fact it is not entitled to either name, and of all the European Flat Fish it most approaches the Brill (*Rhombus lævis*).

The second species *Pseudorhombus multiradiatus*, Gunther, has not I believe, been ever got except in Port Jackson, and that only very rarely ; it may probably be found more abundant in deeper water. *Pardachirus pavoninus* the next on the list was represented by two rather small specimens. It is a species of wide range, but is chiefly met with in warmer seas than ours. Of the next species *Plagusia unicolor* mihi, sometimes called “The Lemon Sole,” only two specimens were captured, one of them ten inches in length. The edible qualities of this Fish are unknown. Of the fifth species *Synaptura nigra* mihi, or “The Botany Bay Sole,” one very large specimen and several small ones were obtained. This is the best of our Flat Fish, being I think, when properly cooked superior to the English Sole. In midsummer it visits in considerable numbers, for the purpose of spawning, the shallow flats in Botany Bay at the mouth of Cook’s River, it is then easily speared in the early morning when the water is clear and unruffled by any breeze. That it is also to be found within the

Heads of Port Jackson is evidenced by the specimens taken on the occasion I am narrating. The remaining species met with are new and may be described as follows :—

SYNAPTURA FASCIATA.

D. + C. + A. 148.

Form rather elongate, the height being twice and a half in the total length ; the head is short ; the mouth small and much twisted to the blind side ; the teeth are minute and regular ; the eyes are in the same vertical plane, and about their vertical diameter apart ; the dorsal fin commences over the eye, the rays are short ; the caudal fin is rather pointed ; the ventrals are equal in size ; pectoral fins none ; the lateral line is straight ; the scales are strongly denticulated on the free margin. The colour is a pale brown, with about twenty dark brown vertical about equidistant bars over the head and body ; the fins are blackish. Length five inches.

One specimen only captured.

LOPHORHOMBUS, *new genus*.

Eyes on the left side and close together, the lower rather in advance of the upper. Mouth small, dentition rather feeble, equally developed on both sides. Vertical fins not continuous with the caudal. Anterior rays of dorsal fin elongate. Pectoral fins well developed. Scales large, smooth, finely ciliated, and rather deciduous. Lateral line much curved above the pectoral fin.

LOPHORHOMBUS CRISTATUS, *n. sp.*

D. 85. A. 72. C. 16. P. 12. V. 6.

Height of body one-half of the total length ; the eyes large, separated only by a narrow prominent ridge ; the dorsal fin commences near the snout, and in front of the upper eye ; the first three rays are elongate, more than twice the length of the

others ; the middle rays of the caudal fin are somewhat elongated ; the left ventral fin commences in advance of the right one ; the pectoral fins are about, or nearly, as long as the head. The colour is of a lightish brown, with some indistinct darker markings. All the fins are minutely speckled.

One specimen about six inches in length.

The fact of the capture in the Trawl of these seven species of Flat Fish—two of them not previously known—in such a small space as was traversed by the net on the occasion I mention, seems to me to prove almost beyond a doubt that the *Pleuronectidæ* are sufficiently numerous on our sea bottoms, and that if we can only find patches along our Coasts free from rocks, Trawl fishing may become a most useful and profitable occupation.

The other species of Flat Fish which have been found in Port Jackson are *Teratorhombus excisiceps* mihi, described in the sixth volume of the Proceedings of this Society ; *Rhomboidichthys spiniceps* mihi, also described in the sixth volume ; *Ammotretis rostratus*, Gunther, and *Solea microcephala*, Gunther, *Solea Macleayana*, Ramsay, and *Synaptura quagga*, Kaup. The last named species is the only one I have not seen, and I give to it the habitat of Port Jackson upon the authority of Count Castelnau.

The apparently entire absence from Sydney waters of any species of the genus *Rhombosolea*, which is represented by several species in Victoria, Tasmania, and the Southern coast generally, is a peculiarity which I previously noticed in my Catalogue of Australian Fishes. I venture however to predict that a better acquaintance with the deep sea Fauna which I believe the Trawl net is destined to give us, will prove the existence, in the cool and deep currents, of species of *Rhombosolea* rivalling—like one New Zealand species *Rhombosolea monopus*—the size and excellence of the European Turbot.
